

MILITARY SPECIFICATION SHEET

ELECTRON TUBE, RECEIVING

TYPE 6080WC

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the electron tube described herein shall consist of this specification and the latest issue of MIL-E-1.

DESCRIPTION: Twin triode, low Mu

Outline --- See figure 1  
Base --- B8-98 (glass-bonded mica)  
Envelope --- T12  
Cathode --- Coated unipotential

Base connections:

Pin no.	---	1	2	3	4	5	6	7	8
Element	---	2g	2a	2k	1g	1a	1k	h	h

ABSOLUTE-MAXIMUM RATINGS:

Parameter:	Ef	Eb	Ec	Ehk	Rk/k	Rg/g	Ic/g	Ik/k	Pp/p	TE	Alt
Unit:	V	V dc	V dc	V	Ohms	Meg	mA	mA	W	°C	ft
Maximum:	6.6	250	0	450	---	(See note 1)	5.0	200	13	300	(See note 2)
Minimum:	6.0	---	---	---	---	---	---	---	---	---	---

TEST CONDITIONS: 6.3 135 0 --- 250 --- --- --- --- --- --- ---

GENERAL:

Qualification - Required

Method	Requirement or test	Notes	Conditions	AQL (percent defective)	Inspection level or code	Symbol	Limits		Unit
							Min	Max	
<u>Qualification inspection</u>									
1216	Base material insulating quality		glass-bonded mica, zone 5 minimum	---	---	---	---	---	---
1031	Variable-frequency vibration	4	$E_{cl} = -7 \text{ V dc}$ ; $R_k = 0$ ; $R_p = 2,000 \text{ ohms}$	---	---	Ep	---	500	mV ac
<u>Quality conformance inspection, part 1</u>									
1256	Electrode current (1) (anode)	6,7,8		0.4	II	Ib	100	150	mA dc
1266	Total grid current	4,8	$R_g = 1.0 \text{ Meg}$ ; $R_k = 125 \text{ ohms}$	0.4	II	Ic	0	-1.0	$\mu\text{A dc}$
1301	Heater current			0.4	II	If	2.25	2.65	A
1306	Transconductance (1)	6,7,9		0.4	II	Sm	6,000	8,200	$\mu\text{mhos}$
1336	Heater-cathode leakage	8	$E_{hk} = +450 \text{ V dc}$ $E_{hk} = -450 \text{ V dc}$	0.4	II	Ihk	---	50	$\mu\text{A dc}$
1201	Short and discontinuity detection			0.4	II	---	---	---	---
<u>Quality conformance inspection, part 2</u>									
1211	Insulation of electrodes	6		2.5	I	R	200	---	Meg
1256	Electrode current (2) (anode)	6,7	$E_b = 250 \text{ V dc}$ ; $E_c = 250 \text{ V dc}$	2.5	I	Ib	---	10	$\mu\text{A dc}$
1306	Transconductance (2)	6,7,9	$E_f = 5.7 \text{ V}$	2.5	I	$\Delta S_m$ $E_f$	---	10	%
1316	Amplification factor	6,7,9	$R_k = 250 \text{ ohms}$	---	---	Mu	1.5	2.5	---
1256	Electrode current (1) (anode) difference between sections			2.5	I	$\Delta I_b$	---	25	mA dc
1031	Sweep-frequency vibration	4,10	$R_k = 0$ ; $R_p = 2,000 \text{ ohms}$ ; $E_c = -7 \text{ V dc}$ ; $F = 50 \text{ to } 500 \text{ Hz}$ ; $2.5 \text{ G}$	6.5	Code H	Ep	---	500	mV ac
1101	Secureness of base, cap, or insert			---	---	---	---	---	---

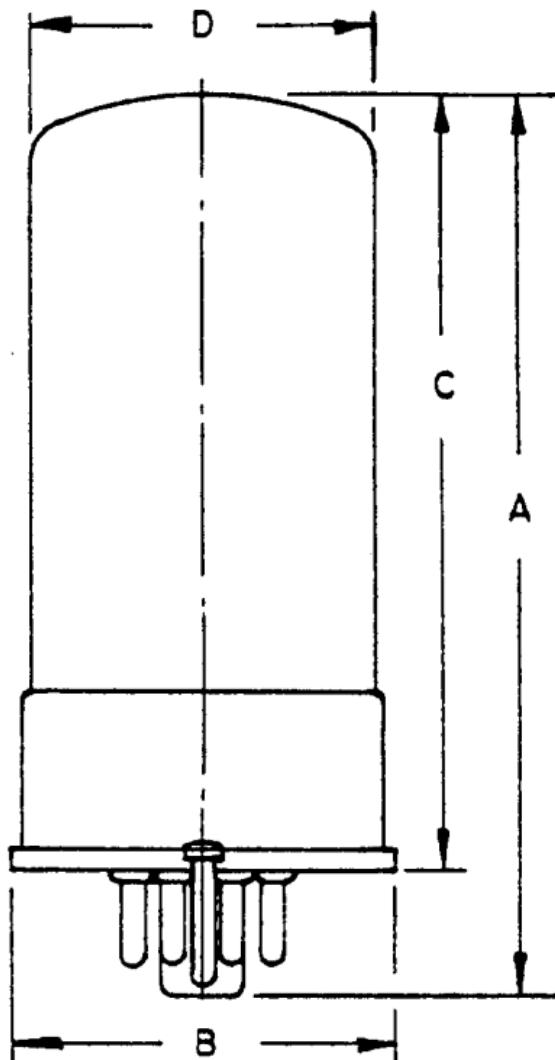
Method	Requirement or test	Notes	Conditions	AQL (percent defective)	Inspection level or code	Symbol	Limits		Unit
							Min	Max	
<u>Quality conformance inspection, part 2</u>									
- Continued									
1111	Base pin solder depth			---	---	---	---	---	---
1041	Shock	3,4	450 G; Ehk = +450 V dc; Ec = -7 V dc; Rp = 2,000 ohms; Rk = 0	---	See note 11	---	---	---	---
1031	Sweep-frequency vibration fatigue	10	F = 50 to 500 Hz; 2.5 G; Ef = 6.3 V; no other voltages applied (except t = 48 hours)	6.5	See note 11	---	---	---	---
---	Post-shock and sweep-frequency vibration fatigue-test end points:								
1031	Sweep-frequency vibration			---	---	Ep	---	500	mV ac
1336	Heater-cathode leakage			---	---	Ihk	---	75	$\mu$ A dc
1306	Transconductance (1)			---	---	$\Delta Sm$	---	10	%
1266	Total grid current			---	---	1c	0	-1.5	$\mu$ A dc
1261	Electrode voltage (anode)	6	Rk = 0; Ec = 0; Eb/Ik = 200 mA dc	---	---	Eb	---	70	V dc
1131	Metallic base sleeve quality			---	---	---	---	---	---
1105	Permanence of marking			---	---	---	---	---	---
<u>Quality conformance inspection, part 3</u>									
1506	Heater-cycling life		Ef = 7.5 V; Enk = 300 V ac; Eb = Ec = 0; 1 min "on" 4 min "off"	---	---	---	---	---	---
---	Heater-cycling life-test end point:								
1336	Heater-cathode leakage			---	---	Ihk	---	75	$\mu$ A dc
1516	Stability life	6	Eb = 150 V dc; Ehk = 300 V ac; Rk/k = 400 ohms; TA = room	---	---	---	---	---	---

Method	Requirement or test	Notes	Conditions	AQL (percent defective)	Inspection level or code	Symbol	Limits		Unit
							Min	Max	
	Quality conformance inspection, part 3 - Continued								
---	Stability life-test end point (1 hour):								
1306	Transconductance (1) change of individual tubes			---	---	$\Delta S_m$	---	10	%
1501	Intermittent life	5,12	Stability life-test conditions; TE = +250°C (min)	---	---	---	---	---	
---	Intermittent life-test end points (1,000 hours):								
1266	Inoperatives Total grid current			---	---	Ic	---	---	---
1306	Transconductance (2)			---	---	$\Delta S_m$	0	-5	$\mu A$ dc
1336	Heater-cathode leakage			---	---	Ef	---	10	%
1301	Heater current			---	---	Ihk	---	50	$\mu A$ dc
1306	Transconductance (1) change of individual tubes			---	---	If	2.25	2.75	A
1211	Insulation of electrodes			---	---	$\Delta S_m$	---	15	%

## NOTES:

1. Maximum grid-circuit resistance:
  - a. 1.0 megohm for cathode-bias operation.
  - b. 0.1 megohm for fixed-bias operation.
  - c. 0.1 megohm for combined fixed-and cathode-bias operation.
2. See "Reduced pressure (altitude) rating", and altitude, maximum peak voltage in the basic document.
3. A grid resistor of 0.1 megohm shall be added to each section; however, this resistor shall not be used when a thyratron-type short indicator is employed.
4. Tie  $I_k$  to 2k;  $I_g$  to 2g; and  $I_a$  to 2a.
5. Envelope temperature (TE) requirements when measured in accordance with the temperature by conduction-band measurement (method 1226), will be satisfied if a tube having bogey  $I_b$  ( $\pm 5$  percent) under normal test conditions, is determined to operate at or above minimum specified temperature at any position in the life-test rack.
6. Test each unit separately.

7. Both units shall be operating.
8. This test to be performed at the conclusion of the holding period.
9. R<sub>k</sub> bypassed with 1,000  $\mu$ F capacitor.
10. Sweep-frequency vibration and fatigue-test procedure:
  - a. This test shall be performed with an average acceleration level equal to the specified value while being swept continuously during a time of approximately 1 minute through the frequency range of 50 to 500 Hz and back to 50 Hz.
  - b. The total excitation time for the test shall be not less than 3 minutes. The tube shall be mounted in each of three planes X, Y, and Z for one-third of the total excitation time. In each mounting plane, the tube shall experience at least one complete frequency sweep.
11. This test shall be conducted on the initial lot and thereafter on a lot approximately every 12 months. In the event of lot failure, the lot shall be rejected and the succeeding lots shall be subjected to this test until a lot passes. When one lot has passed, the 12-month rule shall apply. MIL-STD-105, sample a size code letter E, shall apply.
12. The life-test sample shall consist of 20 tubes per lot and not more than 1 tube failure shall be permitted. In the event of rejection of the first sample, due to failure of more than 1 tube, a second sample of 40 tubes shall be selected from the lot. Acceptance shall then be based on the combined first and second samples. The total tube failures from the combined first and second samples shall not exceed three.



Ltr	Dimensions in inches with metric equivalents (mm) in parentheses	
	Minimum	Maximum
<b>Quality conformance inspection, part 1</b>		
A		4.063 (103.20)
B		1.719 (43.66)
C	3.125 (79.38)	3.500 (88.90)
D	1.438 (36.53)	1.563 (39.70)

FIGURE 1. Outline drawing of electron tube type 6080WC.

Revision letters are not used to denote changes due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:

Army - ER  
Navy - EC  
Air Force - 85

Review activities:

Air Force - 99  
DLA - ES

User activities:

Army - AR  
Navy - AS, CG, MC, OS  
Air Force - 11

Preparing activity:  
Navy - EC

Agent:  
DLA - ES

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